IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants   :   Merwin H. Alferness, William J. Goetzinger,
                          Kent H. Haselhorst, Lonny Lambrecht and
                          Joshua W. Rensch

Serial No.   :   10/667,029

Filed   :   September 18, 2003

For   :   METHODS AND APPARATUS FOR ALLOCATING
                          BANDWIDTH FOR A NETWORK PROCESSOR

Examiner   :   Tanh Q. Nguyen

Group Art Unit :   2182

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Sir:

        In response to the final Office Action mailed August
17, 2007, please amend the above-identified application as
follows:

Amendments to the Claims begin on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently Amended): A method of self-adjusting allocation of memory bandwidth in a network processor system comprising:

determining an amount of memory bandwidth of a network processor ~~allocated among~~ used by a plurality of data types used to transmit data through a plurality of active ports;

determining an amount of memory bandwidth of the network processor used by each of the plurality of data types; and

dynamically adjusting ~~the~~ an amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations.

Claim 2 (Original): The method of claim 1 wherein a total amount of memory bandwidth of the network processor used by the plurality of data types is configurable.

Claim 3 (Original): The method of claim 2 further comprising determining whether memory bandwidth may be allocated to at least one of the plurality of data types.

Claim 4 (Original): The method of claim 3 wherein determining whether memory bandwidth may be allocated to at least one of the plurality of data types includes determining a difference between a maximum amount of memory bandwidth of the network processor that may be used by the plurality of data types and the total amount of memory bandwidth of the network processor currently used by the plurality of data types.

Claim 5 (Original): The method of claim 3 wherein determining whether memory bandwidth may be allocated to at least one of the

plurality of data types includes determining whether a port for transmitting data of at least one of the plurality data types may be activated.

Claim 6 (Previously Presented): The method of claim 1 wherein determining an amount of memory bandwidth of the network processor used by each of a plurality of data types includes:

        determining a number of active ports of the network processor used to transmit data of each of the plurality of data types; and

        determining an amount of memory bandwidth allocated to each active port for each of the plurality of data types.

Claim 7 (Original): The method of claim 6 wherein the amount of memory bandwidth allocated to each active port for a data type is the same.

Claim 8 (Original): The method of claim 6 wherein the amount of memory bandwidth allocated to each active port for an ATM protocol data type is configurable.

Claim 9 (Original): The method of claim 1 wherein the plurality of data types includes at least one of an ATM protocol data type and an Ethernet protocol data type.

Claim 10 (Original): The method of claim 9 wherein the Ethernet protocol data type includes at least one of a Gigabit Ethernet data type and a Fast Ethernet data type.

Claim 11 (Previously Presented): The method of claim 1 wherein dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the

determinations includes at least one of dynamically activating and deactivating a port for transmitting data of at least one of the plurality of data types.

Claim 12 (Currently Amended): An apparatus comprising:

port activation logic, adapted to couple to a memory of a network processor and to interact with the memory so as to:

determine an amount of memory bandwidth of the network processor ~~allocated among~~ used by a plurality of data types used to transmit data through a plurality of active ports;

determine an amount of memory bandwidth of the network processor used by each of the plurality of data types; and

dynamically adjust ~~the~~ an amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations.

Claim 13 (Original): The apparatus of claim 12 wherein a total amount of memory bandwidth of the network processor used by the plurality of data types is configurable.

Claim 14 (Original): The apparatus of claim 13 wherein the port activation logic is further adapted to determine whether memory bandwidth may be allocated to at least one of the plurality of data types.

Claim 15 (Original): The apparatus of claim 14 wherein the port activation logic is further adapted to determine a difference between a maximum amount of memory bandwidth of the network processor that may be used by the plurality of data types and the total amount of memory bandwidth of the network processor currently used by the plurality of data types.

4

Claim 16 (Original): The apparatus of claim 14 wherein the port activation logic is further adapted to determine whether a port for transmitting data of at least one of the plurality data types may be activated.

Claim 17 (Original): The apparatus of claim 12 wherein the port activation logic is further adapted to:

determine a number of active ports of the network processor used to transmit data of each of the plurality of data types; and

determine an amount of memory bandwidth allocated to each active port for each of the plurality of data types.

Claim 18 (Original): The apparatus of claim 17 wherein the amount of memory bandwidth allocated to each active port for a data type is the same.

Claim 19 (Original): The apparatus of claim 17 wherein the amount of memory bandwidth allocated to each active port for an ATM protocol data type is configurable.

Claim 20 (Original): The apparatus of claim 12 wherein the plurality of data types includes at least one of an ATM protocol data type and an Ethernet protocol data type.

Claim 21 (Original): The apparatus of claim 20 wherein the Ethernet protocol data type includes at least one of a Gigabit Ethernet data type and a Fast Ethernet data type.

Claim 22 (Original): The apparatus of claim 12 wherein the port activation logic is further adapted to at least one of dynamically activate and deactivate a port for transmitting data of at least one of the plurality of data types.

Claim 23 (Currently Amended): A network processor system comprising:

        a memory; and

        a network processor coupled to the memory, the network processor comprising:

                a memory controller;

                a plurality of ports; and

                port activation logic, coupled to the memory controller, the plurality of ports and the memory, and adapted to interact with the memory so as to:

                        determine an amount of memory bandwidth of the network processor ~~allocated among~~ <u>used by</u> a plurality of data types used to transmit data through a plurality of active ports;

                        determine an amount of memory bandwidth of the network processor used by each of the plurality of data types; and

                        dynamically adjust ~~the~~ <u>an</u> amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations.

6

R E M A R K S

   In the present Office Action, claims 1-23 were pending before the Office. Of these, claims 1, 12, and 23 were the only independent claims. The Office Action rejected claims 1-23.

   Claims 1-23 were rejected under 35 U.S.C. § 112, first paragraph. Claims 1-23 were rejected under 35 U.S.C. § 112, second paragraph. Claims 1-3, 5, 9, 11, 21-14, 16, 20, 22, and 23 were rejected under 35 U.S.C. § 102(e). Claims 1-3, 6-9, 11, 12-14, 17-20, 22, and 23 were rejected under 35 U.S.C. §102(e). Claims 4, 10, 15, and 21 were rejected under 35 U.S.C. § 103(a).

   Claims 1, 12, and 23 are hereby amended. No new matter has been added by the amendments. No claims have been added, canceled, or withdrawn.

A. CLAIM REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH, IN LIGHT OF THE TERM "ALLOCATED"

   Claims 1-23 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Without conceding the propriety of the rejection, independent claims 1, 12, and 23 have been amended. The Applicants respectfully submit that these claims now even more fully satisfy the enablement requirement of 35 U.S.C. § 112, first paragraph.

   Accordingly, favorable reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, first paragraph are respectfully requested.

B. CLAIM REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH, IN LIGHT OF THE PHRASE "AT LEAST ONE OF THE PLURALITY OF DATA TYPES"

   Claims 1-23 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. For least the reasons set forth herein, the Applicants respectfully traverse this rejection.

Claims 1, 12, and 23 and their dependencies stand rejected as the Office Action contends the specification lacks support for the feature "dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations," as recited in claim 1, for example.

As an initial matter, the Applicants traverse the Examiner's interpretation of the above-recited feature appearing the Advisory Action mailed October 29, 2007. Specifically, the Applicants respectfully submit that the Examiner's addition to the above-recited claim language of the term "solely" is clearly improper. The term "solely" does not appear anywhere in the claims. Further, the Applicants traverse the Examiner's contention that the claims appear "to be incomplete because several essential steps in the paragraph bridging pages 11 and 12 are omitted." The Applicants respectfully submit that the Examiner's selective designation of what is and what is not "essential" is also clearly improper.

In addition to the sections of the specification previously cited for enabling the above-recited features, the Applicants respectfully note the discussion on pages 6-7 of the specification, which describes how determinations for different data types are made (e.g., "The total amount of memory bandwidth currently used for transmitting Fast Ethernet data from one or more output ports 112 of the network processor is also determined." Lines 15-18) This section of the specification goes on to state: "In step 206, it is determined whether additional memory bandwidth may be allocated to one of the plurality of data types. Page 7, lines 1-3. Thus, "dynamically adjusting the amount of memory bandwidth allocated to at least one of the plurality of data types based on the determinations" is discussed.

Accordingly, favorable reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, first paragraph are respectfully requested.

C. CLAIM REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH, IN LIGHT OF THE PHRASE "THE AMOUNT OF MEMORY BANDWIDTH ALLOCATED TO AT LEAST ONE OF THE PLURALITY OF DATA TYPES"

Claims 1-23 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Without conceding the propriety of the rejection, independent claims 1, 12, and 23 have been amended. The Applicants respectfully submit that these claims now even more fully satisfy the definiteness requirement of 35 U.S.C. § 112, second paragraph.

Accordingly, favorable reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph are respectfully requested.

D. CLAIM REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH, IN LIGHT OF THE PHRASE "ADJUSTING THE AMOUNT OF MEMORY BANDWIDTH ALLOCATED TO AT LEAST ONE OF THE PLURALITY OF DATA TYPES"

Claims 1-23 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Without conceding the propriety of the rejection, independent claims 1, 12, and 23 have been amended. The Applicants respectfully submit that these claims now even more fully satisfy the definiteness requirement of 35 U.S.C. § 112, second paragraph.

Accordingly, favorable reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph are respectfully requested.

E.   CLAIM REJECTION UNDER 35 U.S.C. § 102 IN VIEW OF KAWAKAMI

Claims 1-3, 5, 9, 11-14, 16, 20, 22, and 23 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,560,231 to *Kawakami et al.* (hereinafter *"Kawakami"*). For at least the reasons set forth herein, the Applicants respectfully traverse this rejection.

Amended independent claim 1 of the present application recites, *inter alia*, "determining an amount of memory bandwidth of a network processor used by a plurality of data types used to transmit data through a plurality of active ports." Independent Claims 12 and 23 recite, inter alia, "port activation logic… to: determine an amount of memory bandwidth of the network processor used by a plurality of data types used to transmit data through a plurality of active ports."

The Applicants respectfully submit that *Kawakami* fails to disclose at least the above-referenced features of claims 1, 12, and 23.

The Office contends that "Kawakami teaches… determining an amount of memory bandwidth… of a network processor". *Final Office Action,* pages 4-5. The Applicants respectfully traverse this contention. *Kawakami* makes no mention whatsoever of "memory bandwidth". Instead, the citation relied upon by the Office discusses bandwidth of transmission paths. The Applicants respectfully submit that transmission path bandwidth does not equate to memory bandwidth. Thus, *Kawakami* cannot properly be relied upon for teaching or suggesting every feature of independent Claims 1, 12, or 23. Accordingly, the Applicants' respectfully request that the rejection of Claims 1-3, 5, 9, 11-14, 16, 20, 22, and 23 be withdrawn.

F.   CLAIM REJECTION UNDER 35 U.S.C. § 102 IN VIEW OF ALFERNESS

10

Claims 1-3, 6-9, 11-14, 17-20, 22, and 23 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0017781 by *Alferness et al.* (hereinafter *"Alferness"*). For at least the reasons set forth herein, the Applicants respectfully traverse this rejection.

The Applicants anticipate being able to make an appropriate showing under either 37 CFR 1.131 or 1.132, to eliminate *Alferness* as prior art if necessary. However, Applicants do not believe such a showing is necessary at this time based on the Examiner's untenable rejection, but reserve the right to make such a showing if the Examiner maintains his rejection based on *Alferness.*

Independent claim 1 of the present application recites, inter alia, "determining an amount of memory bandwidth of a network processor used by a plurality of data types used to transmit data through a plurality of active ports." Independent Claims 12 and 23 recite, inter alia, "port activation logic… to: determine an amount of memory bandwidth of the network processor used by a plurality of data types used to transmit data through a plurality of active ports."

The Applicants respectfully submit that *Alferness* fails to disclose at least the above-referenced features of claims 1, 12, and 23.

The Office contends that "Alferness teaches in [0040]–[0043] determining an amount of memory bandwidth… of a network processor [Abstract, line 1]." *Final Office Action,* page 7. The Applicants respectfully traverse this contention. While the Abstract may include the term "network processor," and while the cited portions of the specification may discuss assigning bandwidth to virtual channels, these two separate discussions make no mention whatsoever of determining an amount of memory bandwidth. Further, the Applicants respectfully submit that

different transmission rates do not equate to "a plurality of data types." Thus, for at least these two reasons, *Alferness* cannot properly be relied upon for teaching or suggesting every feature of independent Claims 1, 12, or 23. Accordingly, the Applicants' respectfully request that the rejection of Claims 1-3, 6-9, 11-14, 17-20, 22, and 23 be withdrawn.

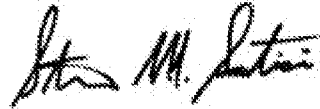## G.   CLAIM REJECTIONS UNDER 35 U.S.C. § 103

Claims 4, 10, 15, and 21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Kawakami*. Applicants respectfully traverse this rejection. As discussed above, *Kawakami* does not disclose all the features recited in Claims 1 and 12, the base claims from which Claims 4, 10, 15, and 21 variously depend. Therefore, Claims 4, 10, 15, and 21 are patentable over the cited reference and the Applicants respectfully request that the rejection be withdrawn.

H.   CONCLUSION

Since the Applicants assert that all the independent claims as amended are in condition for allowance and all remaining claims properly depend from the independent claims, Applicants assert that all claims are allowable.

Applicants do not believe a Request for Extension of Time is required but if it is, please accept this paragraph as a Request for Extension of Time and authorization to charge the requisite extension fee to Deposit Account No. 04-1696. Applicants do not believe any additional fees are due regarding this Amendment. However, if any additional fees are required, please charge Deposit Account No. 04-1696.

Respectfully Submitted,

Dated: <u>December 17, 2007</u>
      Hawthorne, New York

Steven M. Santisi
Registration No. 40,157
Dugan & Dugan, PC
Attorneys for Applicants
(914) 579-2200